## REMARKS

Claims 1, 2, 4, 6, 8-10, 13-14, 16, 18, and 35 – 38 were rejected under 35 U.S.C. 102(b) as being anticipated by Parthasarathy et al. (U.S. 6,251,815) for the reasons stated by the Examiner.

A major difference in interpretation between the teaching of the reference and that of the present invention as represented by the claims remaining under consideration is what is meant by a "region" in a fiber reinforced composite article or member. The reference and the present invention both generally relate to fiber reinforced composite articles that can be used in power generating engines, and that can be made from an intentional selection from substantially the same group of commercially available fibers and matrix materials.

The reference attempts to solve a problem involving differences in thermal conditions between opposing spaced-apart outer surfaces of an article. The solution is presented as various superimposed layers extending between such outer surfaces. Applicants have contended that the structure of the reference defines its "region" as a transverse layer in a portion of an article. One such layer provides one face or surface of an article while another separate layer provides an opposing spaced-apart face or surface of the article. A plurality of superimposed of such transverse layers provides the complete thickness of the article but no layer can extend completely through the total thickness of an article. To do so would defeat the goal or object of the reference of avoiding a direct thermal gradient path between such opposing faces or surfaces.

Each layer of the reference's structure includes fibers or fiber combinations selected with coefficients of thermal expansion different from those of other layers to provide an incremental transition of layers of coordinated coefficients of thermal expansion between a "hot operating side" and a spaced-apart opposing "cool operating side" to accommodate differences in thermal stresses in such opposing surfaces. A

"region" of the reference clearly is a transverse layer or lamination with no layer or "region" itself extending completely through the article.

The present invention solves a different kind of problem for a structure: one involving differences in thermal conditions between a plurality of discrete, separate areas across a surface of an article rather than through the article as with the reference. A specific thermal condition extends from each such first discrete surface area completely through the thickness and matrix of the article to an opposing spaced-apart article second surface. Therefore, in applicants' structure, there is no thermal gradient problem between incremental opposing spaced-apart first and second surface areas. Accordingly, a "region", as used by applicants, is uniform through the matrix between such surfaces. To emphasize such structure, applicants have amended their claims to recite more definitely what is inherent in the present description and claims: that their article or member comprises such first and second spaced apart and opposed surfaces with each of a plurality of regions extending through such surfaces and completely through the matrix therebetween. Thus, applicants describe and claim their "region" as a discrete portion of a structure extending completely through the total thickness of the article or member in the nature of a column through rather than a layer within an article or member.

Support for applicants' interpretation of the meaning of a "region" in the reference is found throughout the reference: the problem thermal gradient is between opposing surfaces of an article, through the thickness of the article. Examples include its Abstract as well as Background of the Invention that establishes the article as having a hot operating side that may be in compression and a cool operating side that may be in tension as a result of a thermal gradient therebetween. The result can be microcracks in the matrix leading to article failure. Summary of the Invention in their column 2 clearly describes the potential solution to the problem as a plurality of layers, that is called "regions", superimposed one upon another as laminations through the article thickness from the hot operating side to the opposite cool operating side. In an example of two layers, the hot region has a thickness of about 10 to 90 % of the total thickness between

the opposite sides, and the cool region has a thickness of about 90 to 10 % of the total thickness. Similarly in an example of three layers including a hot region, an intermediate region and a cool region, each region has a thickness less than the total thickness.

In subsequent portions of the description and drawings of the reference, the original summary of the reference's structure is amplified with examples using commercially available fibers and matrix materials to adjust the coefficient of thermal expansion of a layer to be different from an adjacent layer. Use of known fibers or mixtures of fibers having different coefficients of thermal expansion in a matrix to provide a layer with a selected coefficient of thermal expansion relative to that of adjacent layers, and responsive to differences in thermal conditions from one outer surface to an opposing outer surface through the thickness of a structure, does not change the basic object of the reference and its proposed solution to the described problem. The above basic characterization is unchanged as to the meaning of a "region". Such a region cannot extend completely through the article matrix from the hot side to the cool side without defeating the goal or object of the reference: to eliminate a thermal gradient along a direct path between spaced-apart article opposing surfaces operating at different temperatures.

In contrast, applicants clearly define each of their plurality of regions as originating in a discrete surface area of an article or member surface, for example as shown in present specification in the relationship on page 3, lines 2 – 5, and in Figures 1, 2 and 4 and their associated description describing hot spots and other portions through the article matrix. In such relationship, surface area A is an area ratio of a region surface to the total area of regions across the surface. As described in connection with such figures, particularly Figure 4, regions extend completely through the matrix through and from one member or article surface through a spaced apart opposing surface. For example, on page 8, lines 1 – 9 in connection with Figure 4, the stacking of a plurality of woven members 20 as a fiber reinforcement of an article, while maintaining the same relative position shown in Figure 4, inherently defines an article with a plurality of

discrete regions each extending completely through an article matrix through and between a first surface of a member 20 at the top of the stack through an opposing spaced-apart surface of another member 20 at the bottom of the stack. Based on such description, claims 1 and 13, from which all of the remaining claims depend directly or indirectly, have been amended, as described above, to more clearly distinguish the present invention from structure defined by the reference. Such claims now recite that the article or member comprises a first surface, a second surface opposed to and spaced apart from the first surface and a matrix and reinforcing fibers therebetween, each of a plurality of discrete regions extending completely through the first and second surfaces and matrix between the first and second surfaces.

For all of these reasons, applicants believe that the reference cannot anticipate the completely different kind of structure described and claimed by applicants for a purpose different from that of the reference. It is respectfully requested that the Examiner reconsider and withdraw the rejection under 35 U.S.C. 102(b).

Claims 3, 5, 7, 11-12, 15 and 17 were rejected under 35 U.S.C. 103(a) as being unpatentable over Parathasarathy et al. (U.S. 6,251,815) for the reasons stated by the Examiner.

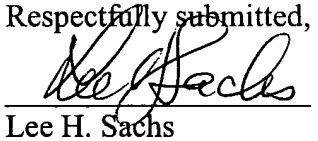
As was mentioned above, for their different objects and purposes, the reference and applicants have selected from the same general group of commercially available fibers and matrix materials previously used in or suggested for the manufacture of fiber reinforced composite articles. It is the particular selection of such fibers and materials for required combinations of properties and their particular inclusion in structure that is completely different.

As was discussed and distinguished in detail above, the origins of applicants' plurality of regions extending completely through the article are at discrete surface areas disposed across a total article surface rather than existing as laminations of an article as in the reference. Each of applicants' different regions originating across a surface are

exposed to different operating temperatures. In contrast, a total surface of the article in the reference is at a single temperature different from an opposing spaced apart total surface at a single different temperature. Therefore, applicants' plurality of regions have a surface area and stress interrelationship with the other elements of the recited relationship formula recited in claims 3 and 15 that exists not only at a surface but also completely through the matrix and its spaced apart outer surfaces. Such a surface area interrelationship cannot exist in the structure of the reference. The structures of the reference and present claims of a different kind as described in connection with claims 1 and 3 from which these rejected claims depend and draw at least a portion of their novelty. In addition, the relationships of surface areas are of a different kind. Therefore the subject matter of these rejected claims cannot be remotely suggested or implied by the disclosure of the reference to one of ordinary skill in the art.

For all of the reasons presented in connection with this rejection as well as those presented in connection with the rejection under 35 U.S.C. 102(b), applicants believe that the rejected claims define patentable novelty over Parthasarathy et al. It is respectfully requested that the Examiner reconsider and withdraw this rejection under 35 U.S.C. 103(a).

Respectfully submitted,



Lee H. Sachs
Reg. No. 18898

General Electric Co.
P.O. Box 156301 – M/D H-17
Cincinnati, Ohio 45215 – 6301
(513) 243 - 6473
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